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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/010,263	12/06/2001	Kazuo Nagatani	100807-00052 FUSA 19.236	5582

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EXAMINER	
NGUYEN, LEE	
ART UNIT	**PAPER NUMBER**
2682	

DATE MAILED: 06/23/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	10/010,263	NAGATANI ET AL.	
	Examiner	Art Unit	
	LEE NGUYEN	2682	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *23 March 2005*.

2a)☒ This action is **FINAL**. 2b)☐ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-19* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☒ Claim(s) *5* is/are allowed.

6)☒ Claim(s) *1-4 and 6-19* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____.
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

DETAILED ACTION

This action is responsive to the communication filed 03/23/2005.

Claim Rejections - 35 USC § 102

1. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
>
> (b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

2. Claims 1-4, 6-19 are rejected under 35 U.S.C. 102(b) as being anticipated by Leyendecker et al. (US 5,923,712).

Regarding claims 1, 12, Leyendecker teaches a distortion compensation method/apparatus for correcting distortion of a transmission power amplifier 103 (fig. 6) in a radio apparatus, comprising:

storing, in memory 603 distortion compensation coefficients for correcting distortion of the transmission power amplifier 103, each of which conforms to a transmit signal and a past transmit signal preceding the transmit signal (col. 10, 35-51); reading a distortion compensation coefficient, which

conforms to a present transmit signal and a past transmit signal, out of the memory, and applying distortion compensation processing to the present transmit signal using said distortion compensation coefficient (col. 10, 35-41); amplifying the transmit signal, to which distortion compensation processing has been applied by the transmission power amplifier and transmitting the amplified signal (co. 6, 23-25); and updating said distortion compensation coefficient based upon the transmit signal before distortion compensation and an output signal from the transmission power amplifier (col. 3, 39-50).

Regarding claims 2, 13, Leyendecker also teaches that each distortion compensation coefficient is stored in the memory in corresponding a transmit signals and a difference between the transmit signal and past transmit signal (col. 18, 37-51).

Regarding claim 3, Leyendecker teaches a distortion compensation method for correcting distortion of a transmission power amplifier 103 (fig. 6) in a radio apparatus, comprising:

storing, in memory 603 distortion compensation coefficients for correcting distortion of the transmission power amplifier, each of which conforms to a transmit signal and a past transmit signal preceding the transmit signal (col. 10, 35-51); converting a transmit signal to a quadrature signal composed of an in-phase component and a quadrature component (col. 5, 27-28); reading a distortion compensation coefficient, which conforms to a present transmit signal and a past transmit signal, out of the memory in complex form (col. 10, 35-41 and col. 11, 29-30); applying distortion compensation processing to said quadrature signal by performing complex multiplication between said quadrature signal and said distortion compensation coefficient (col. 11, 28-30); applying quadrature modulation to the distortion-compensated quadrature signal and amplifying the quadrature-modulated signal by the transmission power amplifier and transmitting the amplified signal (fig. 4, 431, 407, 409, 411, 103, 105, col. 5, 49 through col. 6, 30); demodulating an output signal from the transmission power amplifier (fig. 4, 425, col. 6, 57-60), and updating said distortion compensation coefficient by adaptive signal processing using a difference between the quadrature signal before distortion compensation and the demodulated signal (col. 6, 61 through col. 7, 10).

Regarding claim 4, Leyendecker also discloses a distortion compensation coefficient that is updated and made to converge to a constant value by adaptive signal processing that uses LMS algorithm (col. 14, 45-47 and col. 16, 50-51).

Regarding claims 6/1, 6/2 and 14, Leyendecker also discloses comprising one distortion compensation coefficient, which corresponds to a present transmit signal and a plurality of signal transmitted in the past is read out of the memory and distortion compensation processing is executed (average of previous parameters, col. 14, 45-55).

Regarding claims 7/1, 7/2 and 15, Leyendecker also discloses that one distortion compensation coefficient that corresponds to two signals, namely a present transmit signal and a signal transmitted previously, is read out of the memory and distortion (col. 14, 47-55).

Regarding claims 8 and 16, Leyendecker also discloses a distortion compensation coefficient, which corresponds to a combination of a present transmit signal and a difference between the present signal and a signal

transmitted previously, is read out of the memory and distortion compensation processing is executed (col. 18, 37-51).

Regarding claims 9 and 17, Leyendecker also discloses a distortion, wherein a distortion compensation coefficient, which corresponds to a combination of an instantaneous value of a present transmit signal and an envelope differential value of the transmit signal, is read out of the memory and distortion compensation processing is executed (col. 11, 20-45, col. 17, 45).

Regarding claims 10 and 18, Leyendecker also discloses a distortion compensation coefficient, which corresponds to a power value of a present transmit signal and a power value of a signal transmitted in the past, is read out of the memory and distortion compensation processing is executed (col. 14, 47-55).

Regarding claims 11 and 19, Leyendecker also teaches that a distortion compensation coefficient, which corresponds to an amplitude value of a present transmit signal and an amplitude value of a signal transmitted in

the past, is read out of the memory and distortion compensation processing is executed (col. 11, 42-45).

Allowable Subject Matter

3. Claim 5 is allowed.

Regarding claim 5, the prior art of record fails to teach eliminating phase rotation, which has been produced by said amplifier, from an output signal of the transmission power amplifier, demodulating the signal from which said phase rotation has been eliminated and updating the real part and the imaginary part of said distortion compensation coefficient in such a manner that a difference between in-phase components and a difference between quadrature components of the quadrature signal before distortion compensation and of the demodulated signal will become zero.

Response to Arguments

4. Applicant's arguments with respect to claims 1-4, 6-19 have been considered but are moot in view of the new ground(s) of rejection.

Conclusion

5. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to LEE NGUYEN whose telephone number is (571)-272-7854. The examiner can normally be reached on 8:00 AM - 4:30 PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, NICK CORSARO can be reached on (571)-272-7876. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

6/21/05

LEE NGUYEN
Primary Examiner
Art Unit 2682